EPA Region 7 TMDL Review

TMDL ID	368	*Water Body ID*	IA 04-LDM-0340_0
Water Body Name	Yeader Creek		
Pollutant	Priority Organics		
Tributary	Little White Breast Creek		
State	Iowa	*HUC*	0710000815
Basin	Lower Des Moines River Basin		
Submittal Date	2/11/2005		
Approved	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

EPA received Iowa's formal submission of this TMDL on February 11, 2005 with a cover letter dated February 8, 2005. Revisions were received by email on February 14, 2005 and February 25,2005.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

The pollutants causing the water quality impairments are priority organics, specifically deicing chemicals containing glycol compounds. Yeader Creek is classified as a general use stream. Excess priority organic chemical loading has violated water quality standards narrative criteria (567 IAC 61.3(2)c and 61.3(2)d and impaired the general use of the waterbody. The only known source for the glycol impairment is Des Moines International Airport (DMIA). DMIA NPDES permit concentrations were used in setting load allocations. Ethylene Glycol was set at 125 mg/L 30 day average and 190 mg/l daily maximum. Propylene Glycol was set at 100 mg/L 30 day average and 150 mg/L daily maximum.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The state of Iowa does not have numeric water quality criteria for glycol compounds. The impairment is aesthetically objectionable conditions and acutely toxic conditions caused by excessive loading of ethylene and propylene glycol to the stream. The numeric targets for this TMDL for Ethylene Glycol are 125 mg/L 30 day average and 190 mg/l daily maximum. Targets for Propylene Glycol are 100 mg/L 30 day average and 150 mg/L daily maximum. These values are found in DMIAs NPDES permit. In addition, the current permit requires CBOD shall not exceed a 30 day average of 100mg/L or a daily maximum of 150 mg/L, and a minimum dissolved oxygen concentration of 5.0 mg/L shall be maintained at all times. Deicing fluids have high toxicity and biochemical demand that can create conditions that impair aquatic life use.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

Because of the toxicity of deicing fluids and their impacts to aquatic life, a Benthic Macroinvertebrate Index of Biotic Integrity (BMIBI) will evaluate progress toward achieving a more desirable level of ecological health than currently exists. Deicing fluids have high toxicity and biochemical demand that can create conditions that impair aquatic life use.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

The priority organics impairment is caused by the pollutants ethylene and propylene glycol. These pollutants are linked to deicing fluids used at DMIA. The only source is the stormwater discharge from DMIA. This discharge is covered by the airport's NPDES stormwater permit. Yeader Creek is surrounded predominantly by urban residential/ commercial landuse. All sources have been considered.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Allocations were made based on DMIAs NPDES stormwater permit. Ethylene Glycol was set at 125 mg/L 30 day average and 190 mg/l daily maximum. Propylene Glycol was set

at 100 mg/L 30 day average and 150 mg/L daily maximum. CBOD shall not exceed a 30 day average of 100mg/L or a daily maximum of 150 mg/L, and a minimum dissolved oxygen concentration of 5.0 mg/L shall be maintained at all times.

WLA Comment

The WLA for Ethylene Glycol is 125 mg/L 30 day average and 190 mg/l daily maximum. Propylene Glycol was set at 100 mg/L 30 day average and 150 mg/L daily maximum. These values are found in DMIAs NPDES permit. In addition, the current permit requires CBOD shall not exceed a 30 day average of 100mg/L or a daily maximum of 150 mg/L, and a minimum dissolved oxygen concentration of 5.0 mg/L shall be maintained at all times.

LA Comment

There are no non point sources for priority organics in the watershed for Yeader Creek so the LAs for the TMDL pollutants are zero.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety is implicit. The use of a biological target in addition to the limits on ethylene and propylene glycol in the NPDES strom water permit provides a margin of safety.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

The critical condition for the glycol portion of the TMDL is the cold weather season (October - May). It is during this period that the deicing/anti-icing agents are used for aircraft safety. The critical condition for the biological targets is throughout the year.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

A meeting was held with DMIA and IDNR officials on June 3, 2004. A public meeting was held December 14, 2004 at the Des Moines South Side Library. Comments received were reviewed and, where appropriate, incorporated into the TMDL.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

The chemical monitoring of Yeader Creek will be conducted by DMIA as specified in the NPDES stormwater permit. Ethylene and propylene glycol concentrations will be measured twice per week at the outfall and once per week at the three downstream locations. Sampling will be conducted from October through May and at any other time that glycol is used at or discharged by the DMIA. The BMIBI target set in this TMDL is consistent with other general use streams of similar size within the same landform region. IDNR will further evaluate this target to provide a more comprehensive basis for comparison.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

There are no known non point sources for glycol in this TMDL. Waste load allocations have been based on DMIAs NPDES stormwater permit issued August 30, 2004. The BMIBI will help assess the health of Yeader Creek.